Questions and Answers About Disinfection By-Products (DBPs) for Public Water Systems

What are disinfection byproducts (DBPs)?

Disinfection by-products (DBPs) are potentially carcinogenic chemicals that are formed when a disinfectant such as chlorine reacts with naturally occurring organic carbon. Two groups (or families) of DBPs are the trihalomethane (THM) family and the haloacetic acid (HAA) family.

Why are DBPs regulated?

DBPs are regulated because they may cause cancer. The US EPA promulgated the Stage 1 Disinfectants and Disinfection Byproducts Rule in 1998, and Texas must comply with the federal rule.

What are the potential health effects of DBPs like THMs and HAAs?

Research on these chemicals has shown that they may increase the risk of bladder, rectal, and liver cancer. The United States Environmental Protection Agency (EPA) has determined that the new maximum contaminant levels (MCLs) will decrease people's risk from cancer. More information on the health effects of DBPs is available from EPA's safe drinking water hotline by phone at 1-800-426-4791, or on the world wide web at:

http://www.epa.gov/safewater/drinklink.html.

What public water systems must comply with the new regulations?

All community water systems (like cities, residential entities) and nontransient/noncommunity (NTNC) water systems (like employers and schools) will have to comply with the new rules, regardless of how many people are served. Transient, noncommunity water systems (like restaurants or convenience stores) are not effected by the new rules.

What are the new maximum contaminant levels (MCLs)?

The new maximum contaminant level (MCL) for TTHM will be $80 \mu g/L$ (0.080 mg/L). The MCL for HAA5 will be $60 \mu g/L$ (0.060 mg/L). The MCL is based on the running annual average concentration of all samples.

When will systems have to meet the new TTHM and HAA5 requirements?

- ! Effective January 1, 2002, public water systems that serve at least 10,000 people and use surface water or ground water under the direct influence of surface water must comply with the maximum contaminant levels (MCLs) for total trihalomethanes (TTHM) and haloacetic acids (group of five) (HAA5).
- ! Effective January 1, 2004, all other community and nontransient, noncommunity systems must also start to comply with the MCLs for TTHM and HAA5.

What sampling will be required?

Large surface water systems will be sampled four times a year (quarterly). Very small groundwater systems will be sampled once a year, during the summer. Samples will be collected by TCEQ's sampling contractor. All samples must be taken during normal operating conditions. Monitoring shall be performed at locations and frequency specified in the system's monitoring plan. For more information on sample schedules and locations, you may request a copy of the Drinking Water Standards (Regulatory Guidance RG-346) from the TCEQ Publications Section at 512/239-0028. The new rules for DBPs are in §290.113 of that document.

What are the levels of THMs in my system?

Until 2002, only large (over 10,000 people served) surface water systems must sample THMs in the distribution system and meet an MCL for TTHM. These systems receive TTHM sample results at least once a year. All systems have TTHMs measured at entry points to the distribution system as part of their volatile organic carbon (VOC) analysis, which occurs at least once every three years.

Questions and Answers About Disinfection By-Products (DBPs) for Public Water Systems

Page 2

What are the levels of HAAs in my system?

HAAs are also regulated. The Texas Commission on Environmental Quality (TCEQ) does have information on the levels of HAAs in public water systems.

Why is my level of THMs higher than in other systems?

If your system has high THM levels, there could be various reasons why. Some possibilities include:

- ! <u>Purchased surface water</u>. If you buy some water from a surface water system, it may contain THMs or organic matter that can form THMs upon rechlorination (booster chlorination).
- High levels of bromide in source water. In much of Texas, both surface water and ground water contain bromide ions. Bromide is not hazardous by itself. However, bromide reacts very quickly with chlorine and naturally occurring organic carbon to form DBPs such as THMs.
- ! <u>High levels of organic carbon in source water</u>. Surface water often contains high levels of organic carbon that can form THMs when chlorine is added to the water. Usually groundwater does not have much organic carbon. However, in some parts of Texas the groundwater has enough organic carbon to form THMs.

What can I do to lower my level of THMs?

First, you need to find you WHY your THM levels are high. What you can do to lower your THM levels will depend upon why they are elevated. Some possibilities include:

- ! <u>Purchased surface water</u>. If you are re-chlorinating purchased surface water, you may need to change your re-chlorination strategy. If you are purchasing water that has high THMs from another public water system, you will need to work with that system.
- ! <u>High level of bromide in source water</u>. If your source water is high in bromide, you may need to consider changing your disinfection strategy. For many systems this could mean considering an alternative disinfectant to chlorine. Surface water treatment plants may need to consider changing the point of disinfectant addition.
- High levels of organic carbon in source water. If you have a ground water or surface water with a relatively large amount of naturally occurring organic carbon you may need to consider changing your disinfection strategy, or changing your treatment to remove more organic carbon before disinfection. For many systems this could mean considering an alternative disinfectant to chlorine. Surface water treatment plants may need to consider changing the point of disinfectant addition. Additionally, plants using coagulation may need to improve the removal of organic carbon.

Public water systems must notify TCEQ and/or submit plans to the TCEQ Plans Review Team before making any changes to their disinfection equipment. In addition, a system may be required to notify its customers before providing them with water containing a different disinfectant. If you treat surface water (or groundwater under the direct influence of surface water), regardless of size, you must submit a new CT study (disinfection protocol) to the TCEQ Surface Plant Evaluation Team and get it approved before changing your disinfection strategy. You can reach either team at (512) 239-4691.

Staffing is subject to change without notice. Telephone calls directed to 512/239-4961 will continue to reach the receptionist assigned to the Water Supply Division.